



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/082,183

02/26/2002

Shingo Ishihara

500.41280X00

2432

20457

7590

09/28/2004

ANTONELLI, TERRY, STOUT & KRAUS, LLP
1300 NORTH SEVENTEENTH STREET
SUITE 1800
ARLINGTON, VA 22209-9889

EXAMINER

MACCHIAROLO, PETER J

ART UNIT

PAPER NUMBER

2879

DATE MAILED: 09/28/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/082,183

Applicant(s)

ISHIHARA ET AL.

Examiner

Peter J Macchiarolo

Art Unit

2879

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 July 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-48 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-48 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Amendment

1. The reply filed on 07/02/2004 consists of changes to the claims, and further, the reply consists of remarks related to the prior rejection of claims in the previous Office Action.

However, claims 4-42 are not allowable as explained below.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the thickness d of a layer ranging from a light-emitting area in the organic layer to the second transparent electrode satisfies and equation $d \leq \lambda/4$ must be shown or the feature(s) canceled from the claim(s). No new matter should be entered. The Examiner appreciates this dimension is difficult to show, however recommends adding a reference “ d ” in the figures which shows the recited distance.

3. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as “amended.” If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled “Replacement

Art Unit: 2879

Sheet” in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. **Claims 21, 29, 30, and 45 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.**

6. Regarding claims 21 and 45, the limitation, “the organic light-emitting element corresponds to each of red, green and blue in each pixel,” is unclear. The Examiner reads “the organic light emitting element comprises pixels of different colors.”

7. Regarding claims 29 and 30, the term “1/1000” is a relative term which renders the claim indefinite. The term “1/1000” is not defined by the claim, the specification does not provide a

Art Unit: 2879

standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 4, 6-10, 15-24, 27, 28, 31-35, 40-48 are rejected under 35 U.S.C. 103(a) as being unpatentable over previously cited Taniguchi et al (USPN 4954746; "Taniguchi") in view of Yamazaki et al (USPN 20010024083; "Yamazaki").

9. Regarding claims 4, 27, and 28, Taniguchi shows in figure 4, a light-emitting element comprising an electroluminescent substrate having at least a first electrode (12), a luminescent layer (14) and a second transparent electrode (16) formed on a substrate (11), a counter substrate (1) and a light extraction layer (space between 16 and 6) provided between the organic electroluminescent substrate and the counter substrate.

10. Taniguchi is silent to the luminescent layer being organic, and an auxiliary electrode for the second transparent electrode (means for lowering resistance for the second transparent electrode).

11. However, having an organic luminescent layer and an auxiliary electrode for the second transparent electrode is an obvious and well-known configuration, as evidenced by Yamazaki. This configuration has numerous known advantageous, such as reduced power consumption.

Art Unit: 2879

12. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct Taniguchi's device using organic light emitting element with auxiliary electrodes on the second transparent electrodes to allow for reduced power consumption.

13. Regarding claims 6 and 31, Taniguchi shows in figure 4, a rib (22) is provided between the organic electroluminescent substrate and the counter substrate to control a thickness of the light extraction layer.

14. As discussed above, Taniguchi is silent to an auxiliary electrode.

15. However, one of ordinary skill in the art will realize the combination of Taniguchi and Yamazaki's devices will yield the rib being provided over the auxiliary electrode.

16. The motivation and reasons for combining is the same as for claim 4.

17. Regarding claims 7 and 32, both Taniguchi and Yamazaki are silent to the light extraction layer being 50 μm or more.

18. However, this is an obvious configuration, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. Further, one would be motivated to construct Taniguchi's light extraction layer longer than 50 μm for a variety of reasons, such as to make certain that if the two substrates warp, there is enough clearance between the electrodes so as not to develop a short circuit.

Art Unit: 2879

19. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi and Yamazaki with the light extraction layer being 50 μm or more to facilitate reliable operation.

20. Regarding claims 8 and 33, Taniguchi shows the rib is formed on the counter substrate via the copper film 21 and electrode 2.

21. Regarding claims 9 and 34, Taniguchi shows the rib is formed from a polyimide.

22. Although Taniguchi is silent to the polyimide being an optically cured resin, it would have been obvious to one having ordinary skill in the art that the time the invention was made to use an optically cured resin, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin*, 125 USPQ 416. Further, one would arrive at this modification for a variety of reasons, including material availability and manufacturing processes with sensitive requirements.

23. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi and Yamazaki with the rib being formed from an optically cured resin.

24. Regarding claims 10 and 35, Taniguchi shows in figure 7, the rib is formed on a sealed portion (via copper and solder) of the organic EL substrate and the counter substrate.

25. Regarding claims 15, 17, and 40, Taniguchi is silent to auxiliary electrodes.

26. However, having auxiliary electrodes being formed between pixels is an obvious modification, as evidenced by Yamazaki, since this will prevent light from being attenuated by the opaque auxiliary electrodes. Furthermore, Yamazaki teaches that the auxiliary electrodes should be formed on the transparent electrodes to reduce power consumption.

27. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi, with the auxiliary electrodes being between pixels and on the second transparent electrode, since this will allow for a brighter display with reduced power consumption.

28. Regarding claims 16 and 41, Taniguchi and Yamazaki are silent to auxiliary electrodes being formed on the counter substrate.

29. However, one of working skill using organic EL technology will be able to suitably rearranging the auxiliary electrodes on the counter substrate, and is a matter of obvious design choice. *In re Japikse*, 86 USPQ 70. One would be motivated to such a configuration for a variety of reasons, including easing manufacturing processes.

30. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the auxiliary electrodes on the counter substrate.

Art Unit: 2879

31. Regarding claims 18 and 42, although Yamazaki is silent to a bonding layer being provided to bring the second transparent electrode and the auxiliary electrode into ohmic contact with each other, this is an obvious configuration. One of ordinary skill in the art will appreciate this configuration is necessary for proper operation of the device, and will lower the overall power consumption.

32. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi and Yamazaki with the auxiliary electrode and second transparent electrode being bonded together to provide ohmic contact with each other to lower the overall power consumption of the device.

33. Regarding claims 20 and 44, Taniguchi shows in figure 1 a light-emitting display using the organic light-emitting element recited in claim 4.

34. Regarding claims 19, 22, 43, and 46 Taniguchi discloses the second transparent electrode is formed from a very thin metal film with a high transmissivity.

35. Regarding claims 21, 23, 45, and 47 Taniguchi mentions the organic light emitting element has pixels of a plurality of colors.

36. The Examiner notes that the preamble of claims 23 and 47 recite that the display is used a mobile phone. This is an intended use type preamble, since it merely recites the intended use of a display. Where the body of the claim does not depend on the preamble for completeness but,

Art Unit: 2879

instead, the process steps or structural limitations are able to stand alone, the preamble is generally not accorded any patentable weight. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951). In this case, the preamble has been considered, however is not patentable over Taniguchi since the display can be used in a mobile phone.

37. Regarding claims 24 and 48, Taniguchi discloses the first electrode is a transparent electrode.

38. Claims 5 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi in view of Yamazaki in further view of Fukuda (USPN 6505901; "Fukuda").

39. Regarding claim 5, Taniguchi shows in figure 4, a light-emitting element comprising an electroluminescent substrate having at least a first electrode (12), a luminescent layer (14) and a second transparent electrode (16) formed on a substrate (11), a counter substrate (1) and a light extraction layer (space between 16 and 6) provided between the organic electroluminescent substrate and the counter substrate.

40. Taniguchi is silent to the luminescent layer being organic, and an auxiliary electrode for the second transparent electrode.

41. However, having an organic luminescent layer and an auxiliary electrode for the second transparent electrode is an obvious and well-known configuration, as evidenced by Yamazaki. This configuration has numerous known advantageous, such as reduced power consumption.

Art Unit: 2879

42. Furthermore, although both of Taniguchi and Yamazaki are silent to a total thickness d of a layer ranging from a light-emitting area in the organic layer to the second transparent electrode satisfies an equation $d \leq \lambda/4$, Fukuda teaches this configuration prevents current leak without impairing the light-emission efficiency.¹

43. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi with an organic luminescent layer and an auxiliary electrode having $d \leq \lambda/4$, since this configuration will reduced power consumption while preventing current leak without impairing the light-emission efficiency.

44. Regarding claims 25, Taniguchi discloses the first electrode is a transparent electrode.

45. **Claims 11, 12, 26, 36, and 37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi in view of Yamazaki in further view of Ishihara et al (USPN 5864206; "Ishihara").**

46. Regarding claims 11, 12, 36, and 37, both Taniguchi and Yamazaki are silent to using color filters.

47. However, Ishihara teaches that the transparent glass substrate may be a glass substrate having formed thereon a filter corresponding to an RGB color component,² and this configuration improves color purity.

¹ Fukuda, col. 3, ll. 31-34.

² Ishihara, col. 10, ll. 49-54.

Art Unit: 2879

48. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi and Yamazaki with the color filter to improve color purity.

49. Regarding claim 26, Taniguchi discloses the first electrode is a transparent electrode.

50. Although Taniguchi is silent to white light being emitted from the second transparent electrode into the light extraction layer, one of ordinary skill in the art will realize the optical device shown in figure 1 will produce white light, and Ishihara's color filters on Taniguchi's device will result in colored light being emitted from the counter substrate. One would be motivated to this configuration to ensure the different colors are emitted from the same plane, thereby eliminating any problems associated with viewing angle.

51. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi, Yamazaki, and Ishihara with the recited configuration to eliminate any problems associated with viewing angle.

52. **Claims 13, 14, 38, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Taniguchi in view of Yamazaki in further view of Inohara et al (USPN 4357557; "Inohara").**

53. Regarding claims 13 and 38, both Taniguchi and Yamazaki are silent to a moisture absorbing layer being provided on the counter substrate.

Art Unit: 2879

54. However, this is an obvious configuration as evidenced by figure 1 of Inohara. One would be motivated to such a configuration since it is well known that organic EL layers are extremely susceptible to moisture, and this will increase the overall lifetime of the device.

55. Therefore, in view of the above discussion, it would have been obvious to one having ordinary skill in the art at the time the invention was made to construct the optical device of Taniguchi and Yamazaki with a moisture absorbing layer on the counter substrate to increase the overall lifetime of the device.

56. Regarding claims 14 and 39, Taniguchi and Yamazaki are silent to a moisture absorbing layer being provided around a portion sealing the organic EL substrate and the counter substrate.

57. However, this is an obvious configuration as evidenced by figures 4 and 5 of Inohara.

58. The reason for combining and motivation are the same as for claim 13 above.

Response to Arguments

59. Applicant's arguments filed 07/02/2004 have been fully considered but are moot in view of the new ground(s) of rejection.

Conclusion

60. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

61. USPN 5831701 to Matsuyama et al is evidence that a polyimide film may be optically cured, while USPN 5661500 shows auxiliary electrodes formed on a transparent electrode.


Art Unit: 2879

62. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Peter J Macchiarolo whose telephone number is (571) 272-2375.

The examiner can normally be reached on 8:30 - 5:00, M-F.

63. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar Patel can be reached on (571) 272-2475. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

64. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to be 'PJM', with the letters 'pjm' printed in a small font directly beneath the signature.A handwritten signature in black ink, appearing to be 'Joseph Williams', written above a rectangular box.

Joseph Williams Primary Examiner AU 2879
